

## REMARKS

Reconsideration of the application is respectfully requested for the following reasons:

1. Formalities

The specification and abstract have been revised to place the application in proper U.S. format, to correct various grammatical and idiomatic errors, and to specify that the frame is linear as illustrated in Fig. 2.

Because the changes are all clearly formal in nature and/or supported by the original disclosure, it is respectfully submitted that the changes do not involve new matter.

2. Rejection of Claims 1-29 Under 35 USC §112, 2nd Paragraph

This rejection has been addressed by amending the claims to refer to “said front blades” and “said rear blades,” in claims 1, 12, and 21; correcting the dependency of claims 8, 19, and 28, and amending claim 21 to refer to “said flat panel display,” thereby overcoming the antecedence errors noted in item 3 on page 2 of the Official Action.

In addition, it is noted that new claims 30-37 have been added to recite the feature, clearly shown in Figs. 2 and 3, wherein the “side blade” 12 that connects the front and rear blades is bent to form an angled shape that extend along and covers at least two adjacent lateral edges of the display.

3. Rejection of Claims 1-29 Under 35 USC §102(b) in view of U.S. Patent No. 6,577,288 (Min)

This rejection is respectfully traversed on the grounds that the Min patent fails to disclose or suggest a linear frame made up, as claimed, of front and rear blades and a side blade extending between the front and rear blade to form a “Π” shape, and in which the linear frame is bent or folded around the peripheral edges of a flat panel display or backlight module to form a one-

piece, easily assembled housing for the flat panel display and/or backlight module. The housing of Min consists of multiple housing members assembled together in a perpendicular direction, whereas the claimed invention is a one-piece “Π” cross section frame that is simply bent around the periphery of a display panel and/or backlight to form a much simpler and less costly housing structure.

More particularly, the panel display of Min is made up of three discrete housing structures, including front housing 30, a rear housing 40, and a bracket 21 that are assembled together in a direction perpendicular to the surface of the active area of the LCD device. **This structure is essentially the same as that illustrated in Fig. 1 of the present application.** In contrast, the claimed invention provides a one-piece linear frame that is folded around the peripheral edges of a panel display, as recited in claims 1, 12, and 28, and that includes blades that extend in front of and behind the panel display, as recited in claim 30. The housing members of Min are neither folded around the edge of the display, as claimed, nor do they have a “Π” cross-section that is *in addition to* the bending or folding of the frame around the peripheral edges of the display.

The present invention replaces the **three** flat frame or housing members of Min, which sandwich the display from the front and rear, with a **single** frame that is bent around the peripheral edges of the panel. As a result, assembly of the housing to the panel is simplified, and only a single mold is required, greatly reducing the time and cost of assembly. Furthermore, there is no need for a rib structure to protect the panel, such as is required in the housing of Min, as explained in col. 3, lines 37 *et seq.* of the Min patent.

Because the display housing of Min is not made up of a **linear frame** that is **folded** or **bent** around the display as recited in claims 1, 12, and 21, much less one in which the **side blade** connecting the front and rear blades is **bent** around the display while the **front** and **rear** blades respectively extend **in front of** and **behind** the display as recited in new claim 30, withdrawal

of the rejections of these independent claims, and of the claims depending therefrom, is respectfully requested

Furthermore, with respect to claims 2, 8, 13, 19, 24, and 28, it is respectfully noted that the Min patent could not possibly have suggested the claimed binding unit for closing the **ends** of a linear frame, since the housing members of Min do not have **ends** that are bent or folded to engage or meet each other in the manner claimed, *i.e.*, the housing members of Min do not have ends that need to be bound together.

With respect to claims 3, 7, 14, and 18, the housing members of Min do not include any structures corresponding to the claimed cuts or v-shaped cuts in the front and rear blades that enable, despite the “ $\Gamma$ ” shape, folding of the frame or side blade. These cuts correspond to the v-shaped cuts 13 illustrated in Fig. 2. Since Min does not disclose a linear frame of the type illustrated in Fig. 2, which needs to be folded around the panel, there is no need to include such cuts, or v-shaped cuts.

According to the Examiner, the “cuts” recited in claims 3, 7, 14, and 18 correspond to the gap described in col. 1, lines 48-62 and illustrated in Fig. 2 of the Min patent. However, the “gap” in question is a gap “*between the front case and the glass*” and clearly has nothing to do with the claimed cuts that permit bending of the linear frame illustrated in Fig. 2 to wrap around the peripheral edge of the panel as illustrated in Fig. 3 of the present application.

With respect to claims 4, 15, and 26, it is respectfully noted that since the Min patent does not disclose any structure resembling a linear frame bent around the periphery of a panel display, it cannot be said to disclose that the length of such a linear frame is not greater than the peripheral length of the flat panel display (which ensures that there is no overlap).

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With respect to claims 5, 16, and 27, since Min does not disclose a one-piece integrated frame structure, there is no need for a cable opening of the type claimed, the clearance between housing members already serving as an opening.

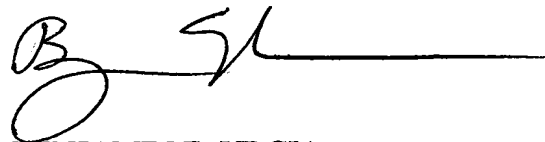
Finally, with respect to claims 6, 17, and 23, it is respectfully noted that Min does not disclose a frame that fixes the position and limits movement of both the liquid crystal display and a backlight, as claimed.

In view of the above-described differences, and in particular the fundamental difference that the display of Min consists of multiple housing members assembled together in a perpendicular direction, whereas the claimed invention is a one-piece "Π" cross section frame that is simply bent around the periphery of a display panel and/or backlight, withdrawal of the rejection of claims 1-29 under 35 USC §102(e) is respectfully requested.

Having thus overcome each of the rejections made in the Official Action, withdrawal of the rejections and expedited passage of the application to issue is requested.

Respectfully submitted,

BACON & THOMAS, PLLC

A handwritten signature in black ink, appearing to read 'B. Urcia', followed by a horizontal line extending to the right.

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Ser. No. 09/970,644

Group Art Unit 2673

Examiner V. Shankar

**Housing For Protecting Flat Panel Display And Method For**

**Assembling Flat Panel Display And The Housing**

**BACKGROUND OF THE INVENTION**

1. Field of the Invention

5           The present invention relates to a housing for a display and, more  
particularly, to a housing for a flat panel display.

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2. Description of Related Art

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10           Currently, ~~the~~ flat panel displays are combined with many plastic  
or metallic frames outside the panel for protecting the panel from impact  
or for blocking light. For example, the liquid crystal display, as shown in  
FIG. 1, is often manufactured ~~throughby~~ assembling a backlight module  
41 with a housing 44, a bottom frame 43, a liquid crystal display panel  
module 40, and a top frame 42 (i.e. a front bezel) together. However, this  
kind of assembly needs to waste a lot of time and material for  
15   manufacturing the molds of housing and frames. This assembly  
increases the costs for manufacturing the flat panel display and takes a lot  
of time for the coordination of molds manufacturers and panel  
assemblers. In addition, ~~the conventional assembly of display panels and~~  
frames ~~isare~~ not convenient to assemble or to disassemble. Moreover, the  
20   weight of the many frames also increases the total weight of the whole  
flat panel display.

          Therefore, it is desirable to provide an improved assembly of the  
conventional ~~assembly of the~~ flat panel display and ~~thea~~ method for

assembling a flat panel display and the protecting housing and frame to mitigate and obviate the aforementioned problems.

### SUMMARY OF THE INVENTION

5           The object of the present invention is to provide a housing for protecting a flat panel display to fix the location of the display panel and/or the backlight module and reduce the number of moldings or save time and cost required for making said housing.

10           Another object of the present invention is to provide a light housing to reduce the total weight of the combined assembly of said housing and the display panel and/or the backlight module, and to easily assemble or disassemble the combined assembly of said housing and the display panel and/or the backlight module.

15           Another object of the present invention is to provide a flat panel display with low weight, low cost and simple assembly of the housing.

          Another object of the present invention is to provide a simple method to assemble the display panel and/or the backlight module and the housing, and further to reduce the weight of the combined assembly of the display panel and/or the backlight module and the housing.

20           To achieve the object, the housing for protecting a flat panel display and/or a backlight module of the present invention comprises: a rear -blade, a front blade, and a side blade extending perpendicularly between and connecting said rear and front blades, wherein said side

blade is integrated with and sandwiched between said front blades and said rear blades to form a linear frame having a cross-section in a shape of “ $\Gamma$ ”, and said frame is allowed to fold to surround the partial or the whole edge of said flat panel display and/or a backlight module.

5           The flat panel display of the present invention comprises: a display panel; and/or backlight module, and a housing comprising: a rear blade, a front blade, and a side blade perpendicular to and connecting the front and rear blades, wherein said side blade is integrated with and sandwiched by said front blades and said rear blades ~~blade~~ to form a  
10 linear frame having a cross-section in a shape of “ $\Gamma$ ”, and said linear frame is allowed to fold to surround the partial or whole edge of said flat panel display and/or ~~a~~ backlight module.

          The method for assembling a flat panel display, ~~comprising~~  
comprises the following steps: (A) providing a flat panel display or a  
15 backlight module, and a housing for protecting athe flat panel display and/or ~~a~~backlight module, comprising: a rear blade, a front blade, and a side blade wherein said side blade is integrated with and sandwiched by said front blades and said rear blades to form a linear frame; and (B) folding or bending said linear frame to surround at least part of the edge  
20 of said flat panel display.

Other objects, advantages, and novel features of the invention will become more apparent from the following detailed description when taken in conjunction with the accompanying drawings.

### BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of the conventional assembly of housing and the liquid crystal display panel.

5        FIG. 2 is a perspective view of the linear frame of the present invention.

FIG. 3 is a perspective view of assembly of the liquid crystal display panel, the backlight module and the folded linear frame of the present invention.

10

### DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

The housing for protecting a flat panel display and/or a backlight module of the present invention comprises: a rear -blade, a front blade, and a side blade wherein said side blade is integrated with and sandwiched between said front blades and said rear ~~blades~~-blade to form a linear frame having a cross-section in a shape of “ $\sqcap$ ”, and said linear frame is allowed to fold to surround the partial or the whole edge of said flat panel display and/or a backlight module.

20        The housing of the present invention for protecting a flat panel display can be used for protecting display panels or a display panel with integrated IC chips and PCB boards. The backlight module in the present invention includes a integrated combination of light guides, light sources



(e.g. LED or CCFL), diffuser sheets and other optical films. The flat panel display of the present invention is not limited. Preferably, the flat panel display panel is a liquid crystal display panel or organic light emission display panel. The size of the flat panel display of the present invention is not limited, either. The method for manufacturing the housing of the present invention is not limited. Preferably, the housing of the present invention is made by ~~injeet~~injection molding or extrusion molding. The inner surface of the linear frame of the present invention can be attached with any functional parts for additional function.

10 Preferably, a plurality of separate blades can be attached on the surface of the inner surface of the linear frame. Most preferably, the separate blades are parallel to the face blades of the frame of the present invention. The number of the separate blades is not limited. The number of layers of the separate blades is not limited, either. Preferably, the number of layer of

15 the separate blades is one. The length of the linear frame of the present invention is not limited. The length of the linear frame of the present invention can be adjusted to meet the size of the display panel. Preferably, the length is equal to or greater than the perimeter of the display panel. The linear frame of the present invention can be selectively arranged

20 additional parts for additional function. Preferably, at least a binding unit is mounted or arranged on the surface of the side blade. The binding unit on the linear frame of the present invention is not limited. Any conventional binding unit can be applied or arranged on the linear frame

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of the present ~~invention~~ invention. Preferably, the binding unit is  
includes fasteners such as clips, hooks, a male/female locking unit,  
screws, bolts, a combination of a tenon and a groove, or glues.  
Conventional adhesives or tape with adhesives can be selectively added  
5 to the binding unit to help the binding unit ~~for to~~ better ~~binding~~ bind the  
ends of the frame to keep the folded linear frame closed. The location of  
the binding unit on the linear frame is not limited. Preferably, the binding  
unit is arranged at the ends of the linear frame. The location of the cuts on  
the surface of the face blades of the linear frame is not limited. Preferably,  
10 the cuts locate at the bending or folding position of the linear frame to  
meet the corner of panel. The shape of the cuts on the linear frame is not  
limited. Preferably, the cuts on the linear frame are V-cuts. The number of  
the cuts is not limited. Preferably, more than 3 cuts ~~is~~ are arranged on the  
linear frame of the present invention. At least an opening for electric  
15 cable can be selectively arranged on the linear frame of the present  
invention. Preferably, one opening is arranged on the linear frame of the  
present invention to extend a cable for power or transmission of signals.  
The material of the linear frame of the present invention is not limited.  
Preferably, the linear frame of the present invention is made by dark  
20 plastic or metal. The inner edge of the linear frame of the present  
invention will define a central open window ~~for~~ that forms the active  
~~area~~ area for display of images after the linear frame is folded and closed.

With reference to FIG. 2 and FIG. 3, there is shown a housing for a

flat panel display of the present invention. The housing shown in FIG. 2 is used to surround a liquid crystal display panel 40 and a backlight module 41. The housing is formed by folding a linear frame 10 having a cross-section in a shape of “ $\Gamma$ ”. The foldable linear frame 10 ~~is consist~~  
5 ~~of~~includes a pair of linear face blades 11 and a linear side blade 12 which is perpendicular to and sandwiched between ~~said the~~ two face blades 11 (the front blade and the rear blade~~);~~ to form the “ $\Gamma$ ” shape. Furthermore, the surface of side blade 12 is perpendicular to the surfaces of the face blades 11. The two ends of the linear frame 10 are connected through a  
10 binding unit after folding to form a closed housing for surrounding at least the edges of the liquid crystal display panel 40 and the backlight module 41. In the present example, the binding unit on the linear frame 10 is a combination of hook 20 and a groove 21. The inner edge of the closed linear frame 10 defines a central open window ~~for the~~that forms an  
15 active area for the liquid crystal display panel 40 to display words and images. On the inner surface of said side blade 12, several separate blades 14 locate to fix the position and limit the movement of the flat panel display 40 and the backlight module 41. In the present invention, the separate blades 14 are parallel to the face blades 11. Moreover, on the  
20 surface of the face blades 11, a plurality of V-cuts 13 is formed. In the present example, three V-cuts can be found on the face blades 11. The V-cuts 13 on the face blades 11 (either front blade or rear blade) of the linear frame 10 preferably locate ~~on~~ the position for future folding to ease the

folding of the linear frame 10. Most of the time, said linear frame 10 of the present invention is made of materials that can block the light. In the example, the linear frame 10 is made of a dark plastic. In addition, an opening 30 is arranged on the surface of the side blade 12. The opening  
5 30 on the side blade 12 of the linear frame 10 can ease the arrangement of a electric cable (~~for~~ for example, an FPC (Flexible Printed Circuit)) for connecting the outside processor and said flat panel display 40 and/or said backlight module 41 inside said housing as the linear frame 10 is folded to be closed (referring to FIG. 3).

10 When the housing is applied, one side edge of the liquid crystal panel and/or the backlight module is placed in the ditch or groove of the linear frame 10, then the linear frame 10 is folded to surround the whole peripheral edge of the liquid crystal panel and/or the backlight module. The inner edge of the closed linear frame 10 defines a central open  
15 window to ~~allow the form an~~ active area of the liquid crystal display panel to display images.

By using the housing of the present invention, only one housing is required. Furthermore, only one mold for making the housing for the flat display panel is needed. Compared with the conventional housing  
20 assembly for protecting the flat panel display (e.g. liquid crystal display panel), less parts is required. In addition, compared with the conventional method for making the housing assembly, less molds ~~is to~~ must be made. And, of course, less time and less cost for making molding is taken. The

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housing of the present invention is easy to be made~~make~~ and assembled~~ed~~.  
On the other hand, since only one part (i.e. the linear frame of the present  
invention) is needed in the housing of the present invention, the  
assembling and taking-out of the flat display panel and the housing can  
5 be achieved very easily and quickly. In addition, since only one part is  
required~~for~~, the housing of the present invention is also comparably light.  
Therefore, ~~compare~~compared with conventional flat panel display  
devices, the weight of the flat panel display integrated with the housing  
of the present invention is light. The housing of the present invention can  
10 be produced through any kind of conventional methods. Preferably, the  
housing of the present invention is made by ~~inject~~injection molding. By  
using the housing of the present invention, the assembly of the flat panel  
display can be simplified, and the cost and the time for manufacturing the  
molds for the housing can be well saved. Therefore, the housing and the  
15 method for assembling the housing of the present invention is novel,  
simple and non-obvious.

Although the present invention has been explained in relation to  
its preferred embodiment, it is to be understood that many other possible  
modifications and variations can be made without departing from the  
20 spirit and scope of the invention as hereinafter claimed.